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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/604,671	08/08/2003	Xiaoyue Liu	130534-1	1670

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EXAMINER	
VERDIER, CHRISTOPHER M	
ART UNIT	**PAPER NUMBER**
3745	

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/604,671	LIU ET AL.	
	Examiner	Art Unit	
	Christopher Verdier	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-17 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-17 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 05 September 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 8-8-03.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Specification

The disclosure is objected to because of the following informalities: Appropriate correction is required.

On page 1, line 1, "Description" is superfluous and should be deleted.

In paragraph 13, line 3, "commutate" should be changed to -- commutated --.

Claim Objections

Claims 12-17 are objected to because of the following informalities: Appropriate correction is required.

In claim 12, line 4, -- a -- should be inserted after "of".

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent 55-134,797 (figures 9-10). Note the centrifugal blower wheel comprising a first blade support 2, a second blade support 3, and plural S-shaped blades 4 disposed between the first and second blade supports, each of the S-shaped blades having a trailing edge near Beta4 bent in a forward direction with respect to the direction of rotation of the wheel, with a leading edge near Beta1 of

the S-shaped blades being inwardly curved with respect to the center of the wheel, and the trailing edge being outwardly curved with respect to the center of the wheel. The recitation in claim 1, lines 1-2 of "for a heating, ventilation and air conditioning (HVAC) blower unit" is a recitation of intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 55-134,797 in view of Weis 3,145,912. The Japanese Patent 55-134,797 (figures 9-10) discloses a centrifugal blower wheel substantially as claimed as set forth above, but does not disclose that there are about 12 to about 18 individual blades (claim 4), and does not disclose that the plurality of blades comprise 16 individual blades (claim 5).

Weis (figure 4) shows a centrifugal blower wheel 20 having 16 individual S-shaped blades, for the purpose of providing a blower with acceptable efficiency.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the blower wheel of Japanese Patent 55-134,797 such that it comprises 16 individual blades, as taught by Weis, for the purpose of providing a blower with acceptable efficiency.

Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 59-93,997 in view of Young 4,806,833 and Japanese Patent 55-134,797. Japanese Patent 59-93,997 (figure 1) discloses an integrated heating, ventilation and air conditioning blower apparatus substantially as claimed, including a centrifugal blower wheel 3 disposed within a housing 12, with a motor 9 in operative communication with the blower wheel, with the motor extending at least partially through a first inlet cone 6 disposed in a first side of the housing.

However, Japanese Patent 59-93,997 does not disclose that the motor is an electronically commutated motor, and does not disclose that the blower wheel comprises a first blade support, a second blade support, and plural S-shaped blades disposed between the first and second blade supports, each of the S-shaped blades having a trailing edge bent in a forward direction with respect to the direction of rotation of the wheel, with a leading edge of the S-shaped blades being inwardly curved with respect to the center of the wheel, and the trailing edge being outwardly curved with respect to the center of the wheel.

Young (figures 1-2) teaches that an electronically commutated motor 17 may be utilized in a conditioning air system having a centrifugal blower 13, for the purpose of providing increased efficiency of the conditioning air system.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the integrated heating, ventilation and air conditioning blower apparatus of Japanese Patent 59-93,997 such that the motor is an electronically commutated motor, as taught by Young, for the purpose of providing increased efficiency.

Japanese Patent 55-134,797 (figures 9-10) shows a centrifugal blower wheel comprising a first blade support 2, a second blade support 3, and plural S-shaped blades 4 disposed between the first and second blade supports, each of the S-shaped blades having a trailing edge near Beta4 bent in a forward direction with respect to the direction of rotation of the wheel, with a leading edge near Beta1 of the S-shaped blades being inwardly curved with respect to the center of the

wheel, and the trailing edge being outwardly curved with respect to the center of the wheel. The arrangement is provided for the purpose of providing a high efficiency blower wheel.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified integrated heating, ventilation and air conditioning blower apparatus of Japanese Patent 59-93,997 such that the blower wheel comprises a first blade support, a second blade support, and plural S-shaped blades disposed between the first and second blade supports, each of the S-shaped blades having a trailing edge bent in a forward direction with respect to the direction of rotation of the wheel, with a leading edge of the S-shaped blades being inwardly curved with respect to the center of the wheel, and the trailing edge being outwardly curved with respect to the center of the wheel, as taught by Japanese Patent 55-134,797, for the purpose of providing a high efficiency blower wheel.

Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 59-93,997 and Young 4,806,833 and Japanese Patent 55-134,797 as applied to claim 6 above, and further in view of Weis 3,145,912. The modified integrated heating, ventilation and air conditioning blower apparatus of Japanese Patent 59-93,997 shows all of the claimed subject matter except for there being about 12 to about 18 individual blades (claim 9), and except for the plurality of blades comprising 16 individual blades (claim 10).

Weis (figure 4) shows a centrifugal blower wheel 20 having 16 individual S-shaped blades, for the purpose of providing a blower with acceptable efficiency.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified integrated heating, ventilation and air conditioning blower apparatus of Japanese Patent 59-93,997 such that it comprises 16 individual blades, as taught by Weis, for the purpose of providing a blower with acceptable efficiency.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 59-93,997 and Young 4,806,833 and Japanese Patent 55-134,797 as applied to claim 6 above, and further in view of Litch 4,063,060. The modified integrated heating, ventilation and air conditioning blower apparatus of Japanese Patent 59-93,997 shows all of the claimed subject matter except for the inlet cone having a minimum diameter at about a midpoint thereof.

Litch (figures 1-2) shows a centrifugal blower 36 having an inlet cone 44 having a minimum diameter at about a midpoint thereof, for the purpose of smoothly guiding air into the blower.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified integrated heating, ventilation and air conditioning blower apparatus of Japanese Patent 59-93,997 such that the inlet cone has a minimum diameter at about a midpoint thereof, as taught by Litch, for the purpose of smoothly guiding air into the blower.

Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Becerra 6,423,118 in view of Japanese Patent 59-93,997 and Japanese Patent 55-134,797. Becerra (figure 2) discloses a heating, ventilation and air conditioning system substantially as claimed for heating/cooling a space, including a system controller 34, a heating and cooling source 40, and an integrated blower apparatus 42 in communication with the system controller, and an airflow path 44 for circulating air through the space. The motor 42 is an electronically commutated motor.

However, Becerra does not explicitly disclose a centrifugal blower wheel disposed within a housing, with the motor 42 extending at least partially through a first inlet cone disposed in a first side of the housing, and does not disclose that the blower wheel comprises a first blade support, a second blade support, and plural S-shaped blades disposed between the first and second blade supports, each of the S-shaped blades having a trailing edge bent in a forward direction with respect to the direction of rotation of the wheel, with a leading edge of the S-shaped blades being inwardly curved with respect to the center of the wheel, and the trailing edge being outwardly curved with respect to the center of the wheel.

Japanese Patent 59-93,997 (figure 1) shows an integrated heating, ventilation and air conditioning blower apparatus including a centrifugal blower wheel 3 disposed within a housing 12, with a motor 9 in operative communication with the blower wheel, with the motor extending at least partially through a first inlet cone 6 disposed in a first side of the housing, for the purpose of providing a compact heating, ventilation and air conditioning blower apparatus.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the heating, ventilation and air conditioning system of Becerra such that it includes a centrifugal blower wheel disposed within a housing, with the motor extending at least partially through a first inlet cone disposed in a first side of the housing, as taught by Japanese Patent 59-93,997, for the purpose of providing a compact heating, ventilation and air conditioning blower apparatus.

Japanese Patent 55-134,797 (figures 9-10) shows a centrifugal blower wheel comprising a first blade support 2, a second blade support 3, and plural S-shaped blades 4 disposed between the first and second blade supports, each of the S-shaped blades having a trailing edge near Beta4 bent in a forward direction with respect to the direction of rotation of the wheel, with a leading edge near Beta1 of the S-shaped blades being inwardly curved with respect to the center of the wheel, and the trailing edge being outwardly curved with respect to the center of the wheel. The arrangement is provided for the purpose of providing a high efficiency blower wheel.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified integrated heating, ventilation and air conditioning blower apparatus of Becerra such that the blower wheel comprises a first blade support, a second blade support, and plural S-shaped blades disposed between the first and second blade supports, each of the S-shaped blades having a trailing edge bent in a forward direction with respect to the direction of rotation of the wheel, with a leading edge of the S-shaped blades being inwardly

curved with respect to the center of the wheel, and the trailing edge being outwardly curved with respect to the center of the wheel, as taught by Japanese Patent 55-134,797, for the purpose of providing a high efficiency blower wheel.

Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Becerra 6,423,118 and Japanese Patent 59-93,997 and Japanese Patent 55-134,797as applied to claim 12 above, and further in view of Weis 3,145,912. The modified integrated heating, ventilation and air conditioning blower apparatus of Becerra shows all of the claimed subject matter except for there being about 12 to about 18 individual blades (claim 15), and except for the plurality of blades comprising 16 individual blades (claim 16).

Weis (figure 4) shows a centrifugal blower wheel 20 having 16 individual S-shaped blades, for the purpose of providing a blower with acceptable efficiency.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified integrated heating, ventilation and air conditioning blower apparatus of Becerra such that it comprises 16 individual blades, as taught by Weis, for the purpose of providing a blower with acceptable efficiency.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Becerra 6,423,118 and Japanese Patent 59-93,997 and Japanese Patent 55-134,797as applied to claim 12 above, and further in view of Litch. The modified integrated heating, ventilation and air

conditioning blower apparatus of Becerra shows all of the claimed subject matter except for the inlet cone having a minimum diameter at about a midpoint thereof.

Litch (figures 1-2) shows a centrifugal blower 36 having an inlet cone 44 having a minimum diameter at about a midpoint thereof, for the purpose of smoothly guiding air into the blower.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified integrated heating, ventilation and air conditioning blower apparatus of Becerra such that the inlet cone has a minimum diameter at about a midpoint thereof, as taught by Litch, for the purpose of smoothly guiding air into the blower.

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nagai (figure 9) is cited to show a blower with S-shaped blades disposed between first and second blade supports, each of the S-shaped blades having a trailing edge bent in a forward direction with respect to the direction of rotation of the wheel. This reference could also have been applied as it anticipates at least claim 1, but is not applied at this time to avoid multiple rejections.

United Kingdom Patent 941,343 (figure 5B) is cited to show an impeller with S-shaped blades having a trailing edge bent in a forward direction with respect to the direction of rotation of the impeller.

Ranz, Hopkins, Mikulina, Morse, Will, German Patent 4,023,724, and Soviet Union Patent 1,262,122 are cited to show blowers with various inlet cones.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.V.
March 29, 2006

Christopher Verdier
Primary Examiner
Art Unit 3745